

New dimensions of learning in a free society

ON the occasion of the inauguration of Dr. Edward H. Litchfield as chancellor of the University of Pittsburgh, May 9-11, 1957, the campus was the setting for a series of distinguished lectures and seminars, including a seminar given with the dedication of the new Graduate School of Public Health.

Among the guests and speakers were:

Charles H. Best, M.D., director, Charles H. Best Institute, University of Toronto; John C. Bugher, M.D., director for medical education and public health, Rockefeller Foundation; G. Brock Chisholm, M.D., former Director General, World Health Organization; Carlyle F. Jacobsen, Ph.D., executive dean for medical education, State University of New York; Paul Mellon, chairman, A. W. Mellon Educational and Charitable Trust; Fillmore H. Sanford, Ph.D., associate director, Joint Commission on Mental Illness and Health, Cambridge, Mass.; Warren Weaver, Ph.D., vice president for the natural sciences and medical sciences, Rockefeller Foundation; Abel Wolman, D.E., professor of sanitary engineering, School of Hygiene and Public Health, Johns Hopkins University.

A few outstanding quotations from the speakers are given below. The full text is to be published by the University of Pittsburgh.

Stakes in Nuclear Power

A great discontinuity in human experience occurred when science first realized, just a few years ago, that fission and fusion of atomic nuclei can be accomplished by man. That discovery suddenly lifted the equation $E=c^2m$ from its previous status as an innocent algebraic oddity to the level of a scientific and social revo-

lution. Whether or not man is going to solve all his problems, in a horrid negative sense, by destroying civilization with nuclear bombs is as yet uncertain. But what is quite certain is that, provided we do go on existing, we will in the future live in a new physical environment . . .

Medical X-rays, fallout from weapons testing, and the undesirable but minor oddments of radiation we receive from other sources are, however, only part of the story. What seems to me of really major importance to the public health problem of the future is the clearly emerged fact that nuclear power installations, on a large and widely dispersed scale, have to be accepted as assured. In October 1956, the switch was closed on the first British power reactor at Calder Hall. It produces somewhat under 100,000 kilowatts. By the end of 1957 seven more power reactors are expected to be operating. But by 1965 the British, in accordance with recently increased plans, expect to have 24 power reactors in use, totaling approximately 6 million kilowatts of output in energy.

The total world requirements of energy for the three main demands of comfort heating, of process heating, and of power are something like 4 billion tons of coal equivalent at the present time. Fifty years from now it seems likely that this requirement will have become at least five times as great; and, as was remarked in a *Fortune* article a few years ago, "Everywhere the need for power bursts through the most careful estimates." We see that nuclear fission can even now compete, under many circumstances, with coal. It is almost impossible to believe that controlled nuclear fusion will not be achieved; and there are even hints, coming

out of the Berkeley laboratories this past winter, that light elements may eventually enter the practical fusion picture. In other words, we might as well face it. We are, and in a truly big way, in for a nuclear power future.

This new nuclear future will pose a large set of new problems for public health. Garbage disposal occupied the attention of Mr. Shattuck a hundred years ago, but the public health engineer of tomorrow must be prepared to cope with radioactive garbage. An array of new regulations will clearly be necessary to control location, shielding, protection against accident, minimizing of risk in the transport of hot material, dispersal and disposal of radioactive waste, and so on. The radiation exposure history of an individual may very possibly turn out to be, in this new future, the most critical item of individual health data. Concentration of radioactive isotopes by sea organisms; storage of long-lived isotopes in the soil, in vegetation, and in dairy products; the slow accumulation of internal emitters, as strontium-90 gets built into our bones; the risk of increased incidence of leukemia; the general influence of radiation exposure in shortening life expectancy; and perhaps of the gravest, because of the most persistent, importance, the genetic damage caused by radiation—these are clearly problems of first magnitude.

At the present moment we can clearly see these problems facing us in ever increasing future impact. And at the present moment we simply do not have the organization, the personnel, or, most important of all, the knowledge with which to meet these problems.

It is all too clear that we must greatly accelerate our activities in that general field designated as radiation biology. It is equally clear that we have to know a great deal more about genetics, both at the most general and fundamental levels and at the more special, the specially difficult and the particularly relevant, level of human genetics.

I dare to suggest—indeed I run the risk of urging—that these may well be the most important public health problems of the next 50 years. The physical sciences have, in one sense, been guilty of creating these problems for you. Public health, medical science, biology, and the physical sciences must team up, in a new and

closer and more effective comradeship, to meet these formidable challenges. The stakes are no trivial prizes of comfort or convenience. The stakes are survival.

—WARREN WEAVER

Sources of Social Infection

Of course we, in the wealthy countries, take it for granted that our local customs are better than those of the so-called underdeveloped countries. Many of our people are astonished to find that in Asia, for example, there are to be found some techniques and methods, particularly in the fields of mental and social health, far superior to ours. We know that maternal deprivation, that is, the loss even temporarily, of physically close, warm mother love, is a potent cause of physical, mental, and social ill health appearing in infancy, childhood, adolescence, or later life. The World Health Organization report, *Maternal Care and Mental Health*, by John Bowlby in 1951 and his summary in the Penguin book, *Child Care and the Growth of Love*, in 1953 document that knowledge. Much of our recent concern for mental and social health has been for early diagnosis of emotional disturbance, particularly in the early school years. It is well known, however, that in most cases the serious and often irreversible damage has been done before school age. Diagnosis of mental illness in childhood is not prevention any more than early diagnosis of cancer or tuberculosis is prevention. Diagnosis may lead to the recognition of causes, but only elimination of the cause or causes is prevention.

Though we know all this we still, even in some of our recently built hospitals, continue to keep newborn babies under glass in nurseries, allowing them to be with their mothers only for the short periods necessary for nursing. We still take babies and small children suffering from illness or injury into hospitals without their mothers, a procedure we know to be destructive to the child's physical, mental, and social development. In some extreme cases we even limit the hours in which mothers are allowed to visit their own children, sometimes to as little as 3 or 4 hours a day. Probably no young child can survive such an experience without some damage to his development.